FORCEnet

FORCEnet Integrated Architecture

Briefing for

Verification Board

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Purpose

- Obtain Verification Board approval for FORCEnet Tier 3 High-level Operational Concept graphics (OV-1) and accompanying text document.

- Tier 3 OV-1s will then be integrated and consolidated with Tier 1 and Tier 2 OV-1 products as Version 2.0 and entry into DARS.

Agenda

Mission Peopl e Capability

- OV-1 Requirements Review
- Fn Battlespace Awareness / ISR Tier 3 OV-1
- Fn Communications and Networks Infostructure Tier 3 OV-1
- Fn Command and Control / Decision Support Tier 3 OV-1
- Recommendation
- Way Ahead

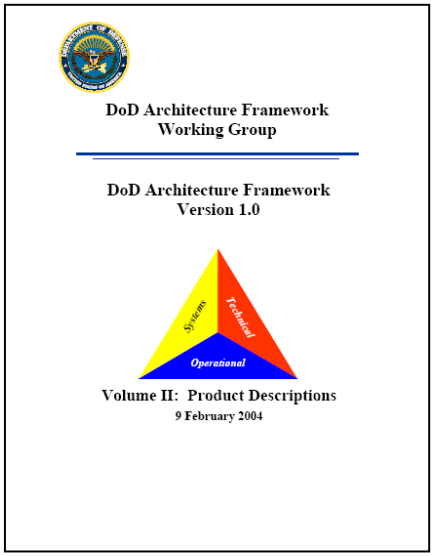
DoDAF Requirements

Mission People Capability

- DoDAF OV-1 Requirements
  - "…provides a quick, high-level description of what the architecture is supposed to do, and how it is supposed to do it."
  - "…provides a description of the interactions between the subject architecture and its environment, and between the architecture and its external systems."

DoDAF Version 1.0, Vol. II, 9 February 2004

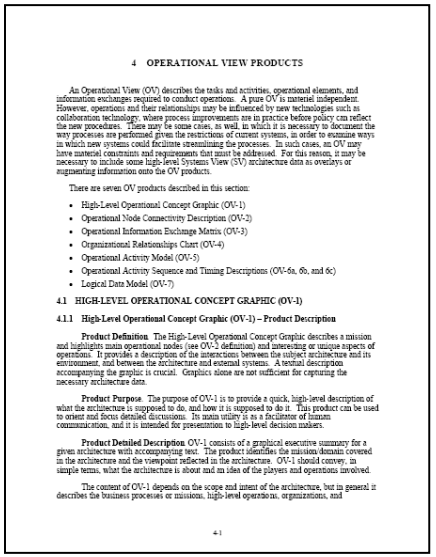
A textual description is crucial. Graphics alone are not sufficient.



DoD Architecture Framework
Working Group

DoD Architecture Framework
Version 1.0

Volume II: Product Descriptions
9 February 2004



4 OPERATIONAL VIEW PRODUCTS

An Operational View (OV) describes the tasks and activities, operational elements, and information exchanges required to conduct operations. A pure OV is materiel independent. However, operations and their relationships may be influenced by new technologies such as collaboration technology; where process improvements are in practice before policy can reflect the new procedures. There may be some cases, as well, in which it is necessary to document the way processes are performed given the restrictions of current systems, in order to examine ways in which new systems could facilitate streamlining the processes. In such cases, an OV may have material constraints and requirements that must be addressed. For this reason, it may be necessary to include some high-level Systems View (SV) architecture data as overlays or augmenting information onto the OV products.

There are seven OV products described in this section:

- High-Level Operational Concept Graphic (OV-1)
- Operational Node Connectivity Description (OV-2)
- Operational Information Exchange Matrix (OV-3)
- Organizational Relationships Chart (OV-4)
- Operational Activity Model (OV-5)
- Operational Activity Sequence and Timing Descriptions (OV-6a, 6b, and 6c)
- Logical Data Model (OV-7)

4.1 HIGH-LEVEL OPERATIONAL CONCEPT GRAPHIC (OV-1)

4.1.1 High-Level Operational Concept Graphic (OV-1) – Product Description

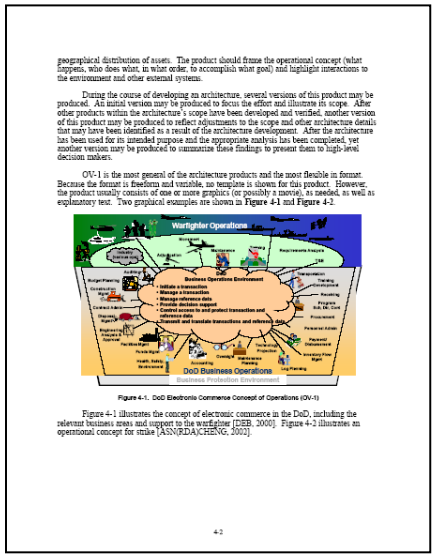
Product Definition The High-Level Operational Concept Graphic describes a mission and highlights main operational nodes (see OV-2 definition) and interesting or unique aspects of operations. It provides a description of the interactions between the subject architecture and its environment, and between the architecture and external systems. A textual description accompanying the graphic is crucial. Graphics alone are not sufficient for capturing the necessary architecture data.

Product Purpose The purpose of OV-1 is to provide a quick, high-level description of what the architecture is supposed to do, and how it is supposed to do it. This product can be used to orient and focus detailed discussions. Its main utility is as a facilitator of human communication, and it is intended for presentation to high-level decision makers.

Product Detailed Description OV-1 consists of a graphical executive summary for a given architecture with accompanying text. The product identifies the mission/domain covered in the architecture and the viewpoint reflected in the architecture. OV-1 should convey, in simple terms, what the architecture is about and an idea of the players and operations involved.

The content of OV-1 depends on the scope and intent of the architecture, but in general it describes the business processes or missions, high-level operations, organizations, and

4-1



geographical distribution of assets. The product should frame the operational concept (what happens, who does what, in what order, to accomplish what goal) and highlight interactions to the environment and other external systems.

During the course of developing an architecture, several versions of this product may be produced. An initial version may be produced to focus the effort and illustrate its scope. After other products within the architecture's scope have been developed and verified, another version of this product may be produced to reflect adjustments to the scope and other architecture details that may have been identified as a result of the architecture development. After the architecture has been used for its intended purpose and the appropriate analysis has been completed, yet another version may be produced to summarize these findings to present them to high-level decision makers.

OV-1 is the most general of the architecture products and the most flexible in format. Because the format is freeform and variable, no template is shown for this product. However, the product usually consists of one or more graphics (or possibly a movie), as needed, as well as explanatory text. Two graphical examples are shown in **Figure 4-1** and **Figure 4-2**.

Figure 4-1. DoD Electronic Commerce Concept of Operations (OV-1)

Figure 4-1 illustrates the concept of electronic commerce in the DoD, including the relevant business areas and support to the warfighter [DEB, 2000]. Figure 4-2 illustrates an operational concept for strike [ASN(RDA)CHENG, 2002].

4-2

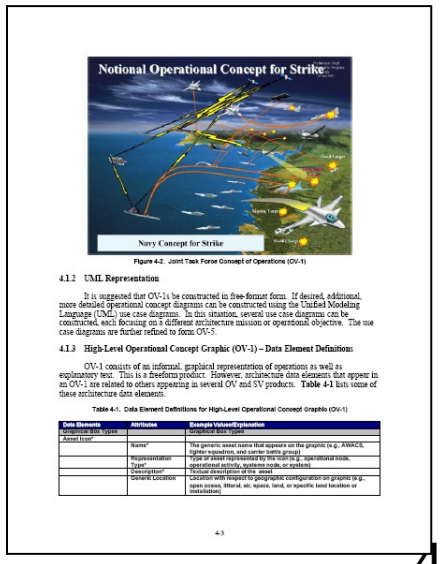


Figure 4-2. Joint Task Force Concept of Operations (OV-1)

4.1.2 UML Representation

It is suggested that OV-1s be constructed in free-format form. If desired, additional, more detailed operational concept diagrams can be constructed using the Unified Modeling Language (UML) use case diagrams. In this situation, several use case diagrams can be constructed, each focusing on a different architecture mission or operational objective. The use case diagrams are further refined to form OV-5.

4.1.3 High-Level Operational Concept Graphic (OV-1) – Data Element Definitions

OV-1 consists of an informal, graphical representation of operations as well as explanatory text. This is a freeform product. However, architecture data elements that appear in an OV-1 are related to others appearing in several OV and SV products. **Table 4-1** lists some of these architecture data elements.

Table 4-1. Data Element Definitions for High-Level Operational Concept Graphic (OV-1)

Data Elements	Attributes	Example Values/Explanation
Operational Activities		Graphical Activities
Asset Icon*		
	Name*	The generic asset name that appears on the graphic (e.g., AWACS, fighter squadron, and carrier battle group)
	Representation Type*	Type of asset represented by the icon (e.g., operational node, operational activity, systems node, or system)
	Description*	Textual description of the asset
	Generic Location	Location with respect to geographic configuration on graphic (e.g., open ocean, littoral, air, space, land, or specific land location or installation)

4-3

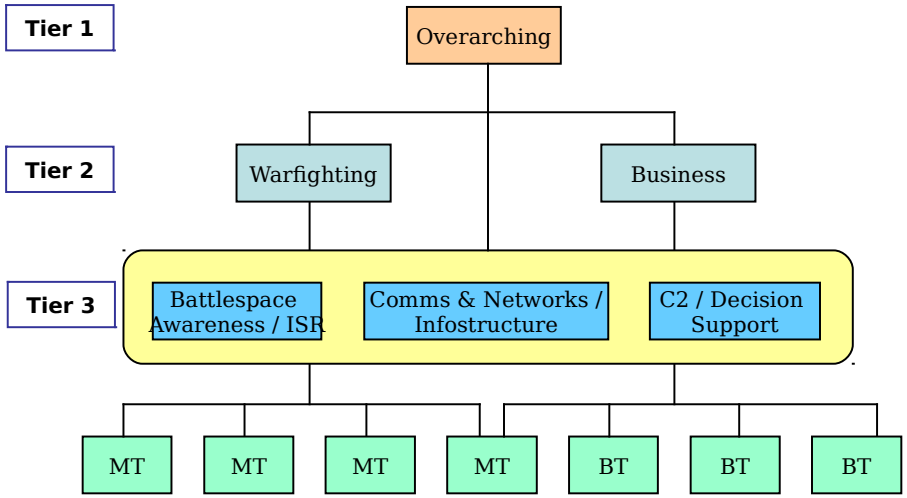
AV-1 Requirements

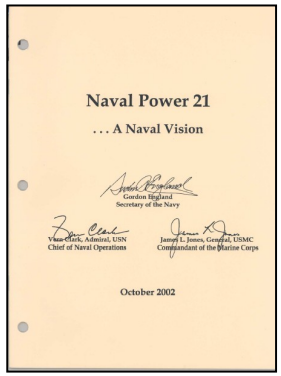
Mission People Capability

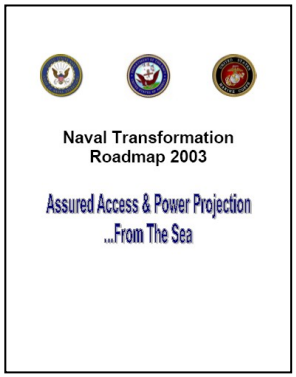
- AV-1 Requirements
  - “ The OV-1 will include a series of graphical representations with summary text of the concepts. The OV-1 will be developed in three levels: overarching, domain (warfighting and business) and effects.”

    - Fn IA Overview and Summary Information, Version 1.0, 12 May 2005
- Driven by the FORCEnet Functional Concept

  Includes relevant concepts from Naval Power 21, the Navy and the JBMC2 Transformation Roadmap





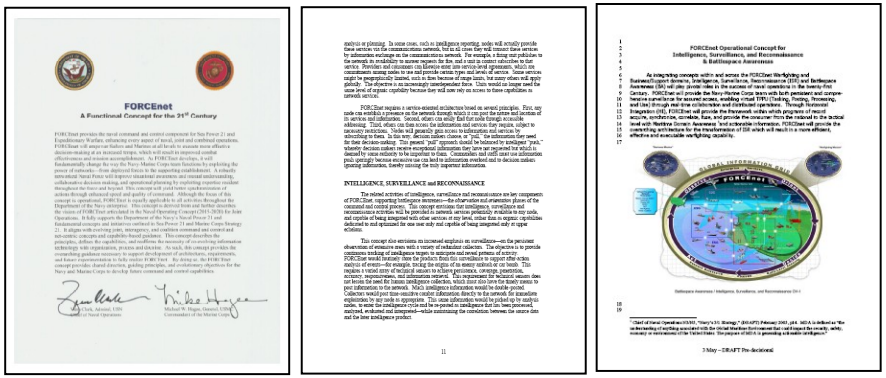


Multi-tiered approach adopted to capture fullness of the Concept

Battlespace Awareness / ISR (Tier 3 OV-1)

- FORCEnet embodies the power of Net-Centric Operations integrating people, platforms, sensors, and weapons into a networked, distributed force.
- Capabilities described:
  - 1, 2, 3, 4, 5, 6, 11
- NNWC SME review completed 24 May.
- Approved by Integration Board 08 Jun.

Battlespace Awareness / Intelligence, Surveillance, and Reconnaissance OV-1


FORCEnet
A Functional Concept for the 21st Century
FORCEnet Operational Concept for Intelligence, Surveillance, and Reconnaissance & Battlespace Awareness

"…ISR activities will be provided as network services…"

Battlespace Awareness / ISR (Tier 3 OV-1)

Mission ★ People ★ Capability

Approved 08 Jun by Integration Board

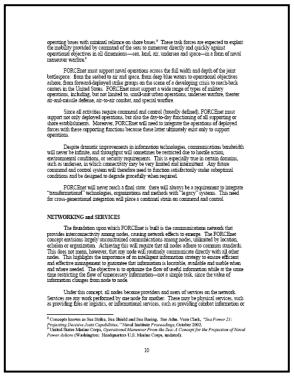
Communications & Networks / Infostructure (Tier 3 OV-1)

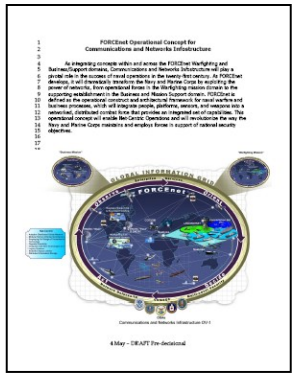
Mission ★ People ★ Capability

- "The underlying premise from which FORCEnet gets its power is the network effect, which causes the value of a product or service in a network to increase exponentially as the number of those using it increases."
- Capabilities described:
  - 1, 9, 10, 11, 12, 13, 14
- NNWC SME review completed 24 May.
- Approved by Integration Board 08 Jun.

Communications and Networks Infrastructure OV-1

FORCEnet
A Functional Concept for the 21st Century





"…unconstrained communications among nodes…"

Communications & Networks / Infostructure (Tier 3 OV-1)

Mission ★ People ★ Capability

Approved 08 Jun by Integration Board

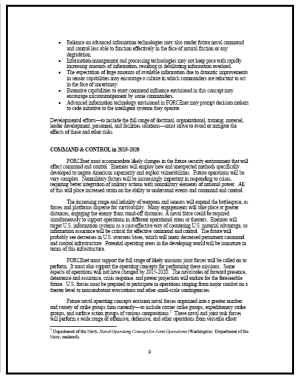
Command & Control / Decision Support (Tier 3 OV-1)

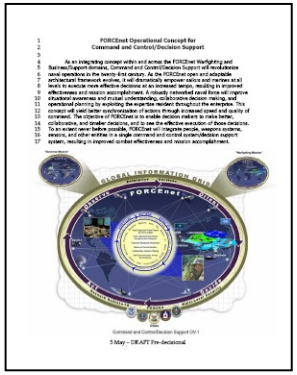
Mission People Capability

- "The greatest breakthrough that FORCEnet will achieve in future command and control is in the area of maximum decentralization."
- Capabilities described:
  - 7, 8, 15
- NNWC SME review completed 24 May.
- Approved by Integration Board 08 Jun.

Command and Control/Decision Support OV-1

FORCEnet
A Functional Concept for the 21st Century





"...the real power is connecting the extremities of the force."

Command & Control / Decision Support (Tier 3 OV-1)

Mission Peopl Capability

Approved 08 Jun by Integration Board

Command and Control/Decision Support OV-1

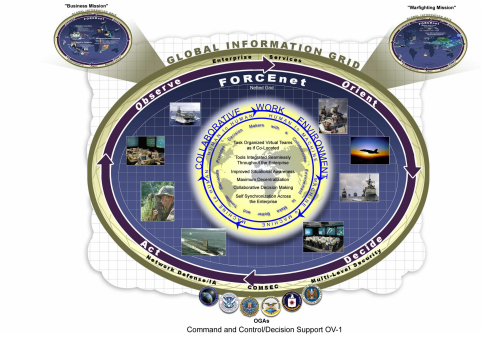
Recommendation

Mission People Capability

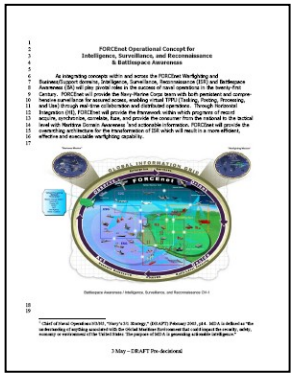
- Verification Board approval of Tier 3 OV-1 graphics and accompanying text. Products will then be integrated and consolidated with Tier 1 and Tier 2 OV-1 products as Version 2.0 and entry into DARS.

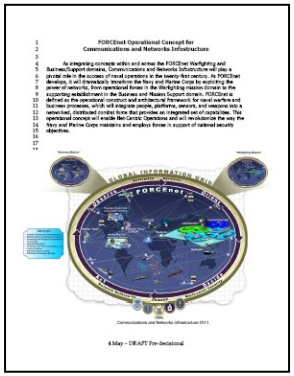
Battlespace Awareness / Intelligence, Surveillance, and Reconnaissance OV-1

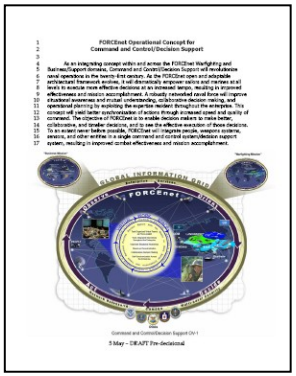
Communications and Networks Infrastructure OV-1



Command and Control/Decision Support OV-1







Way Ahead

- FORCEnet High-Level Global Perspective (Tier 1 OV-1)
  - Approved 27 April by Verification Board
- FORCEnet Warfighting Mission Domain (Tier 2 OV-1)
  - Approved 27 April by Verification Board
- FORCEnet Business & Support Mission Domain (Tier 2 OV-1)
  - Approved 27 April by Verification Board
- FORCEnet Tier 3 OV-1s (BA/ISR, C&N/I, C2/DS)
  - 24 May – Reviewed by SMEs
  - 08 Jun – Approved by Integration Board
  - 09 Jun – Presented to Verification Board
- FORCEnet Tier 4 OV-1 (Mission Threads)
  - 16-18 Aug – Presented to Integration Team, Integration Board, and Verification Board

Backups

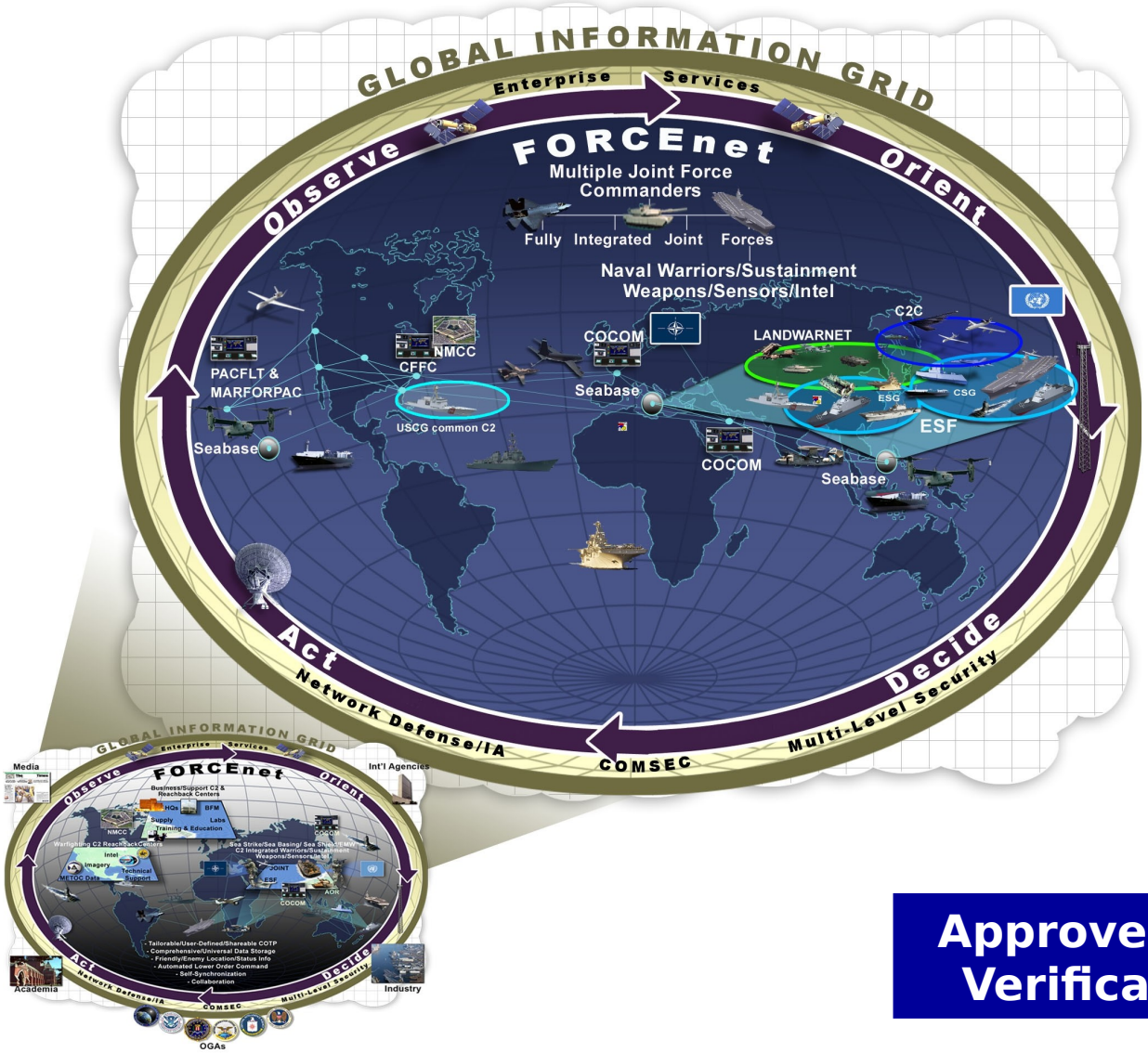
FORCEnet High Level Global Perspective (Tier 1 OV-1)

Mission Peopl Capability

Approved 27 Apr by Verification Board

FORCEnet Warfighting Mission Domain (Tier 2 OV-1)

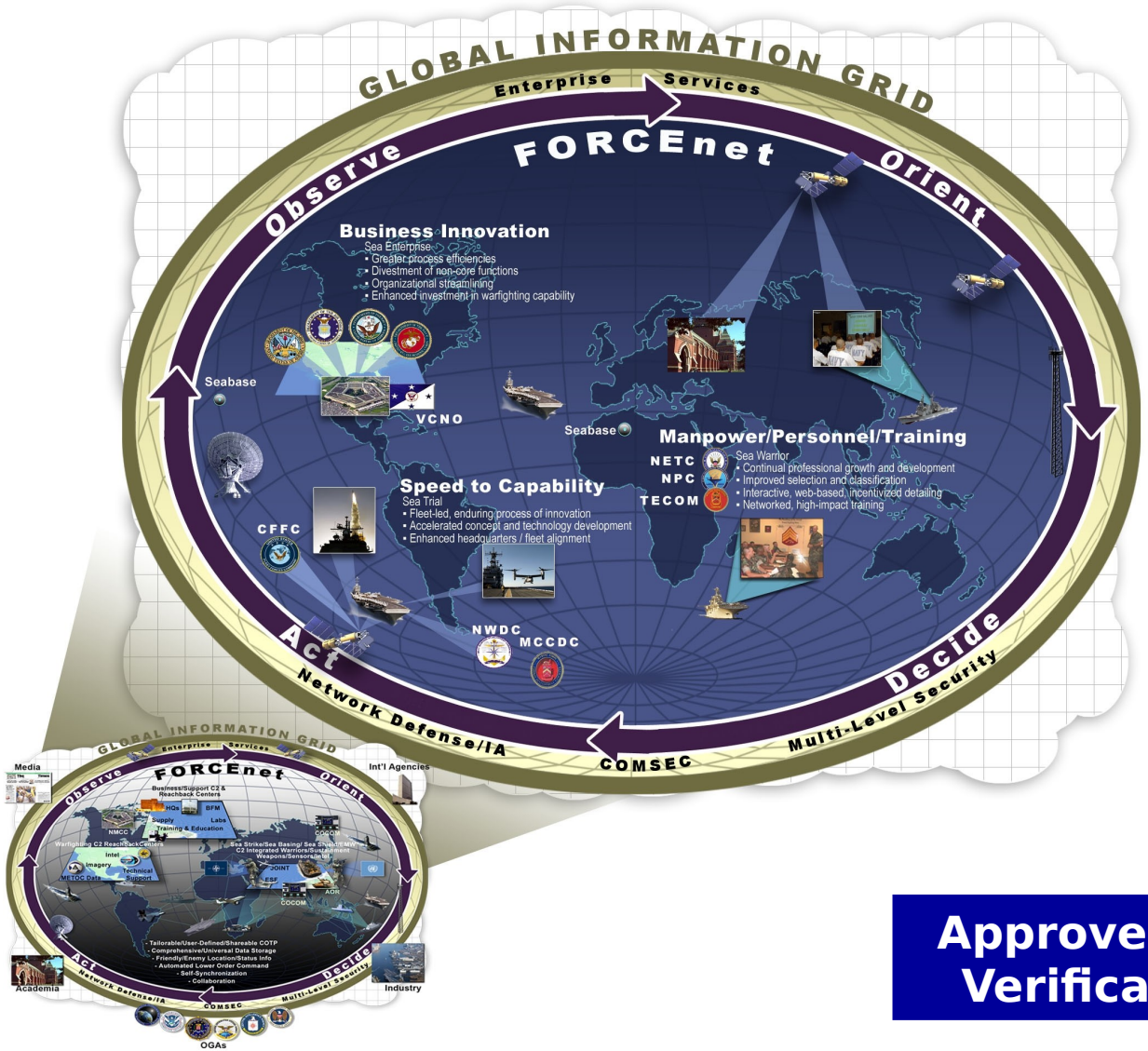
Mission Peopl Capability



Approved 27 Apr by Verification Board

Support Mission Domain (Tier 2 OV-1)

Mission Peopl Capabilit



Approved 27 Apr by Verification Board

FORCEnet Concept Capabilities

Mission Peopl e Capability

1. Provide robust, reliable communication to all nodes, based on the varying information requirements and capabilities of those nodes.
2. Provide reliable, accurate and timely location, identity and status information on all friendly forces, units, activities and entities/individuals.
3. Provide reliable, accurate and timely location, identification, tracking and engagement information on environmental, neutral and hostile elements, activities, events, sites, platforms, and individuals.
4. Store, catalogue and retrieve all information produced by any node on the network in a comprehensive, standard repository so that the information is readily accessible to all nodes and compatible with the forms required by any nodes, within security restrictions.
5. Process, sort, analyze, evaluate, and synthesize large amounts of disparate information while still providing direct access to raw data as required.

FORCEnet Concept Capabilities

Mission Peopl e Capability

6. Provide each decision maker the ability to depict situational information in a tailorable, user-defined, shareable, primarily visual representation.
7. Provide distributed groups of decision makers the ability to cooperate in the performance of common command and control activities by means of a collaborative work environment.
8. Automate lower-order command and control sub-processes and to use intelligent agents and automated decision aids to assist people in performing higher-order subprocesses, such as gaining situational awareness and devising concepts of operations.
9. Provide information assurance.
10. Function in multiple security domains and multiple security levels within a domain, and manage access dynamically.

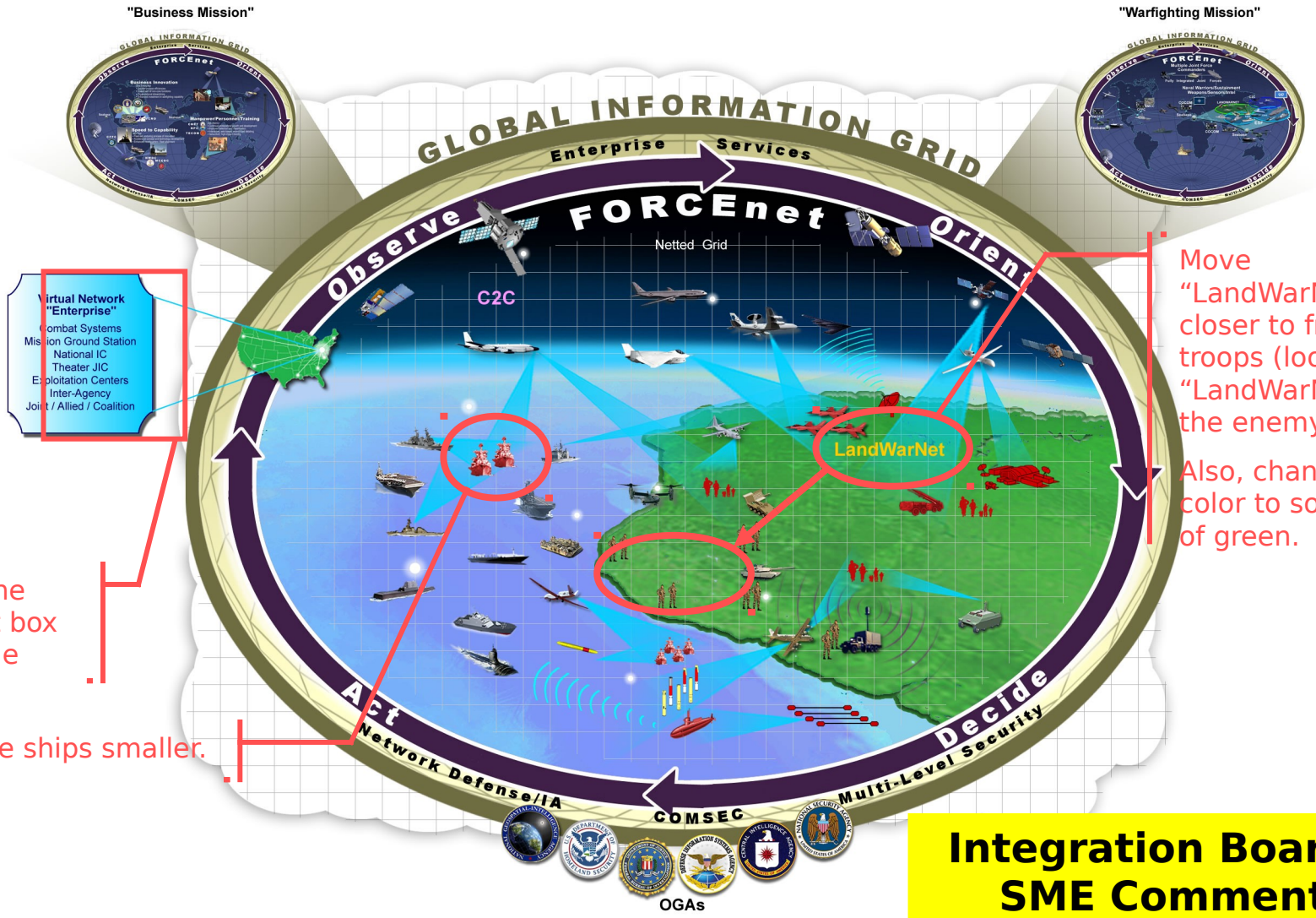
FORCEnet Concept Capabilities

Mission Peopl e Capability

11. Interoperate with command and control systems of very different type and level of sophistication.
12. Allow individual nodes to function while temporarily disconnected from the network.
13. Automatically and adaptively monitor and manage the functioning of the command and control system to ensure effective and efficient operation and to diagnose problems and make repairs as needed.
14. Incorporate new capabilities into the system quickly without causing undue disruption to the performance of the system.
15. Provide decision makers the ability to make and implement good decisions quickly under conditions of uncertainty, friction, time, pressure, and other stresses.

Battlespace Awareness / ISR (Tier 3 OV-1)

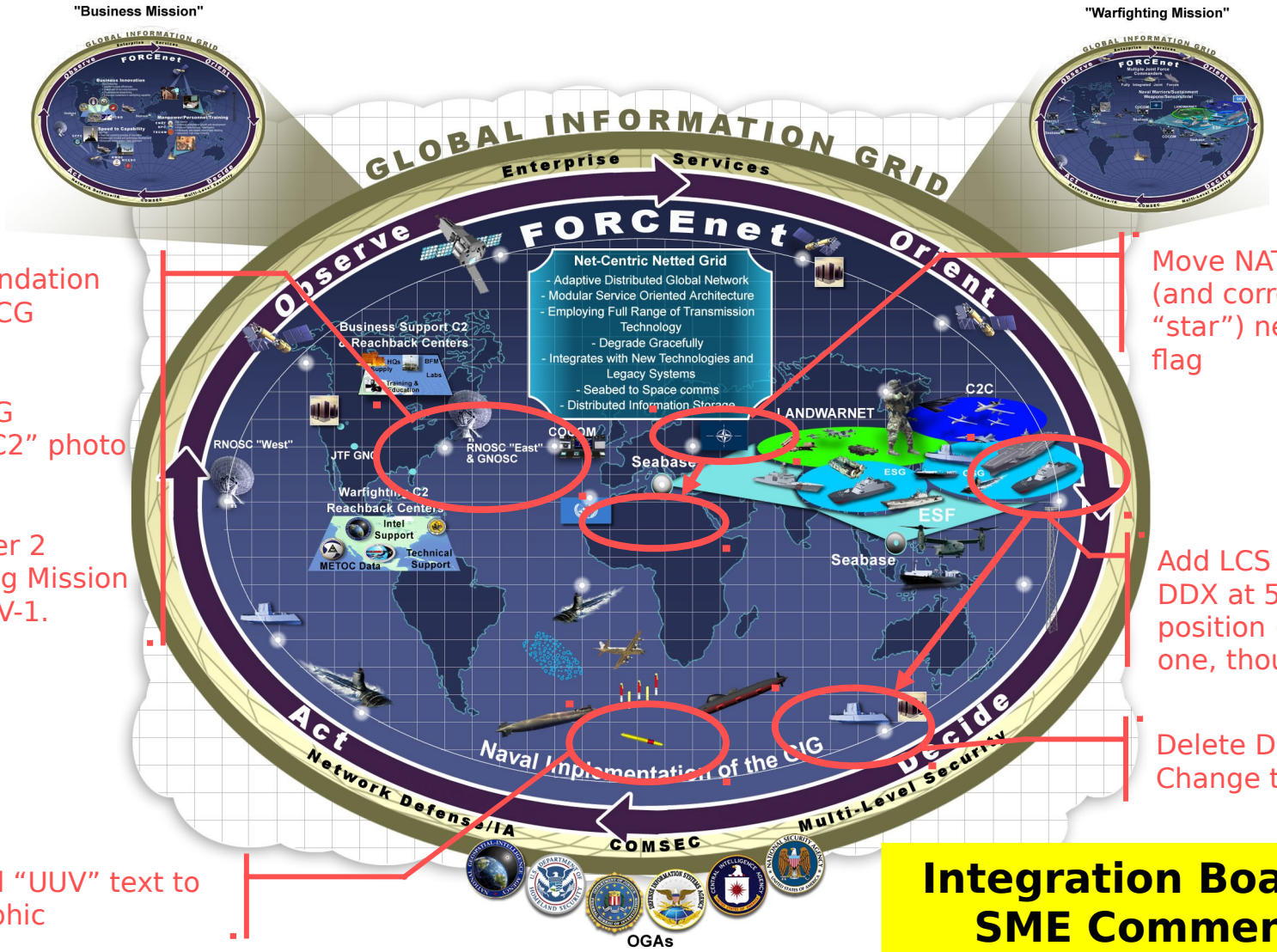
Mission People Capability



Integration Board & SME Comments Incorporated

Communications & Networks / Infostructure (Tier 3 OV-1)

Mission ★ People ★ Capability



Recommendation to add USCG

Add “USCG common C2” photo

… from Tier 2 Warfighting Mission Domain OV-1.

Ad d “UUV” text to graphic

Move NATO flag (and corresponding “star”) next to UN flag

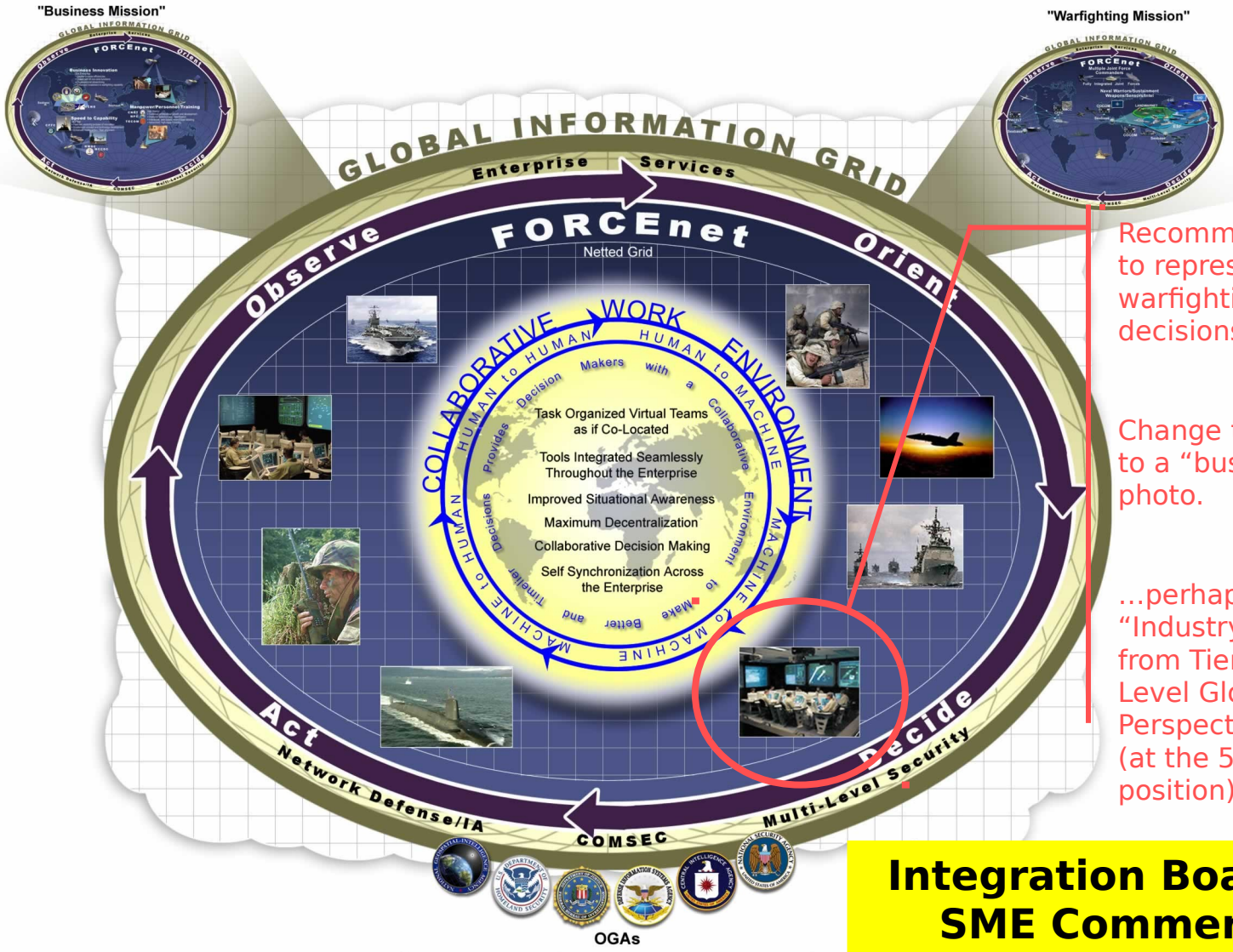
Add LCS in place of DDX at 5 o’clock position (Keep this one, though).

Delete DDX; Change to LCS

Integration Board & SME Comments Incorporated

Command & Control / Decision Support (Tier 3 OV-1)

Mission Peopl Capability



Recommendation to represent non-warfighting decisions…

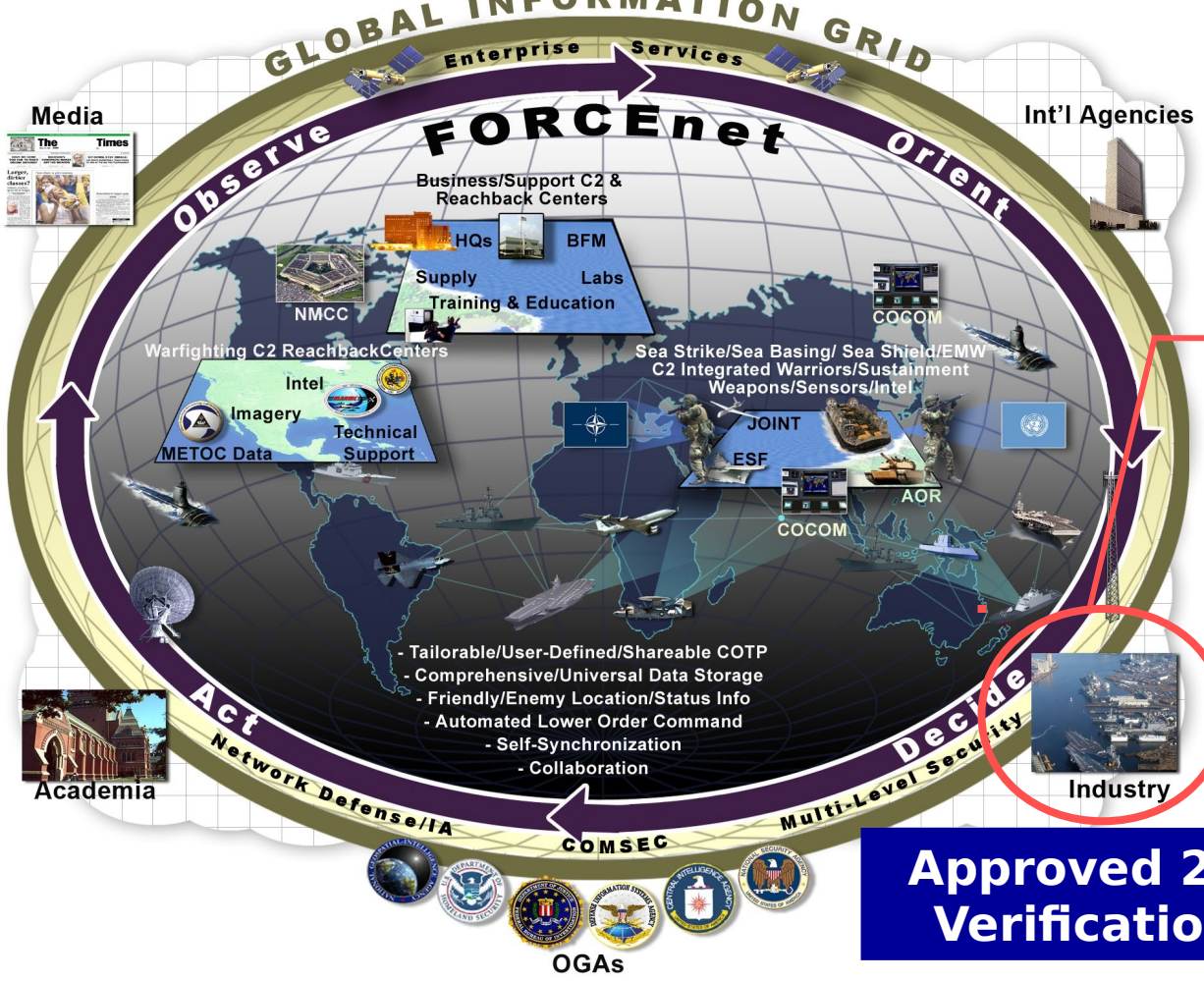
Change this picture to a “business” photo.

…perhaps use “Industry” photo from Tier 1 High Level Global Perspective OV-1 (at the 5 o’clock position).

Integration Board & SME Comments Incorporated

FORCEnet High Level Global Perspective (Tier 1 OV-1)

Mission Peopl Capability



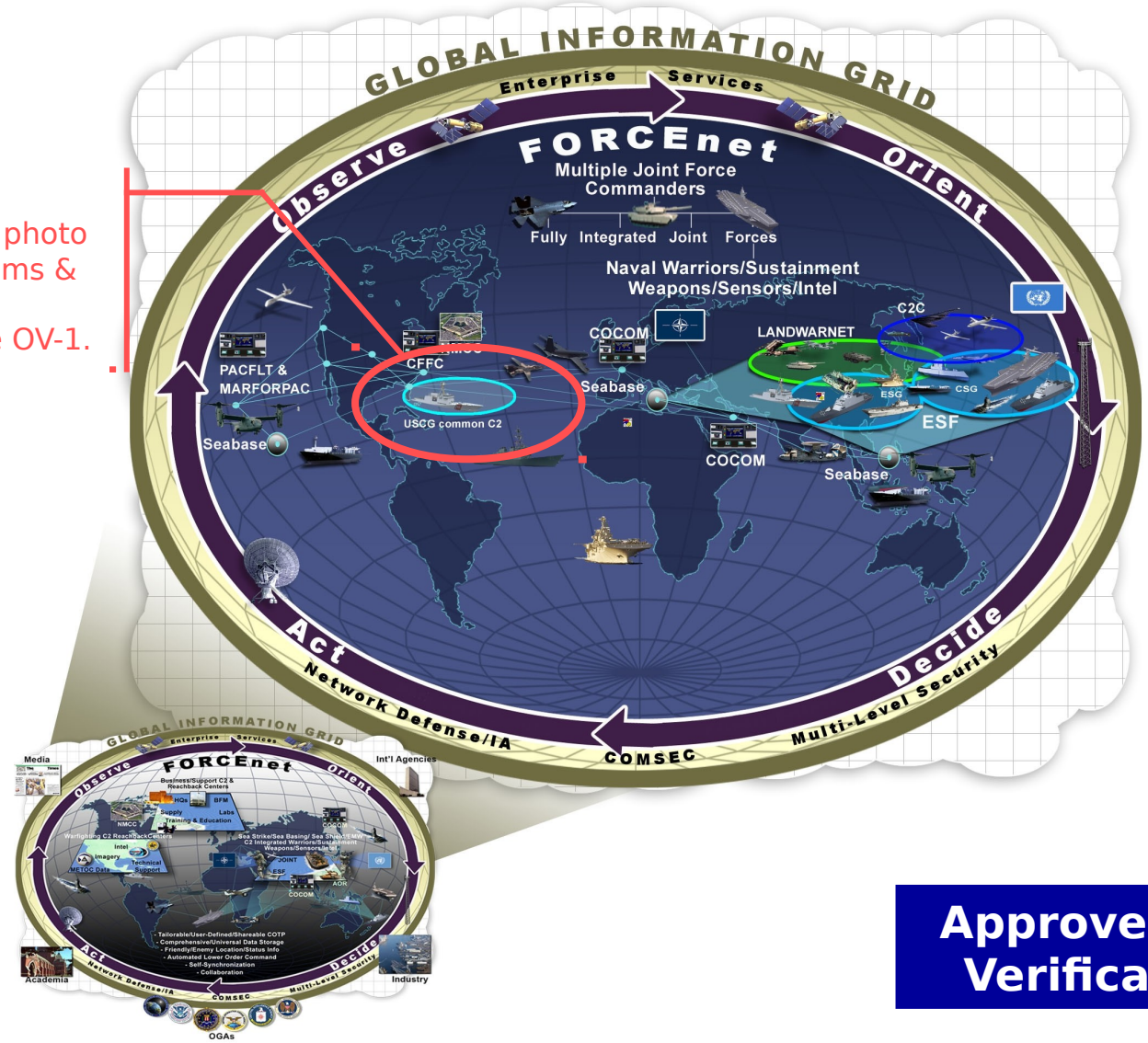
... use "Industry" photo for Tier 3 C2/DS OV-1

Approved 27 Apr by Verification Board

FORCEnet Warfighting Mission Domain (Tier 2 OV-1)

Mission Peopl Capability

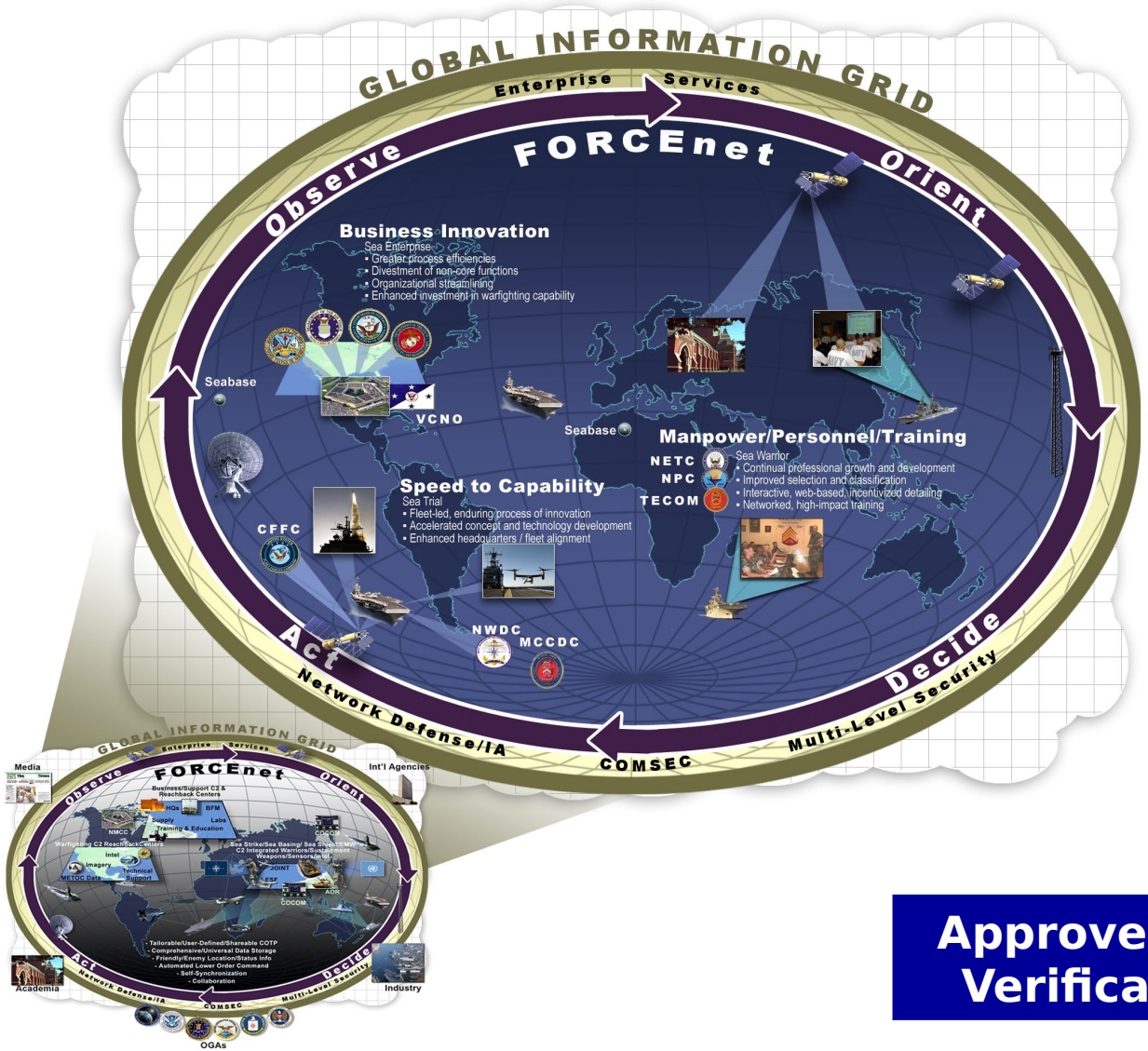
- …use USCG common C2" photo to Tier 3 Comms & Networks Infrastructure OV-1.



Approved 27 Apr by Verification Board

Support Mission Domain (Tier 2 OV-1)

Mission Peopl Capabilit



Approved 27 Apr by Verification Board